This presentation does not contain any proprietary, confidential or otherwise restricted information.

June 9, 2015

TI001 – Clean Cities Overview

Dennis A. Smith , P.E.

National Clean Cities Director

TI000 - Technology Integration Overview

Activities

- **VT Deployment (Clean Cities) – A voluntary, locally based government/ industry partnership initiative**
- Legislative and Rulemaking
- **Advanced Vehicle Competitions**
- Education Programs
  - Graduate Automotive Technology Education
  - Advanced Electric Drive Vehicle Education Program

Clean Cities
U. S. Department of Energy

GATEWAY TO THE FUTURE
GATE
GRADUATE AUTOMOTIVE TECHNOLOGY EDUCATION

EcoCAR3
ADVANCED VEHICLE TECHNOLOGY COMPETITION

Deployment Challenges and Rationale

Deployment efforts accelerate market transformation by increasing public awareness & consumer acceptance/adoption of new vehicle technologies that are being developed through the Vehicle Technologies Office (VTO) R&D activities.

Deployment programs are essential when the success of new technologies depends on consumers changing their driving and purchasing habits.

Primary Focus – Achieve Petroleum Reduction …
by Implementing Next-Steps when R&D is completed

Roughly 10% of VTO base budget supports Deployment (Technology Introduction) efforts

Portfolio of Technologies

Alternative Fuels

Electric Vehicles
Biodiesel
Ethanol
Hydrogen
Propane
Natural Gas

Idle Reduction

Heavy-Duty Trucks
School & Transit Buses
Light-Duty Vehicles

Fuel Economy

More Fuel efficient vehicles, adopting smarter driving and vehicle purchasing habits

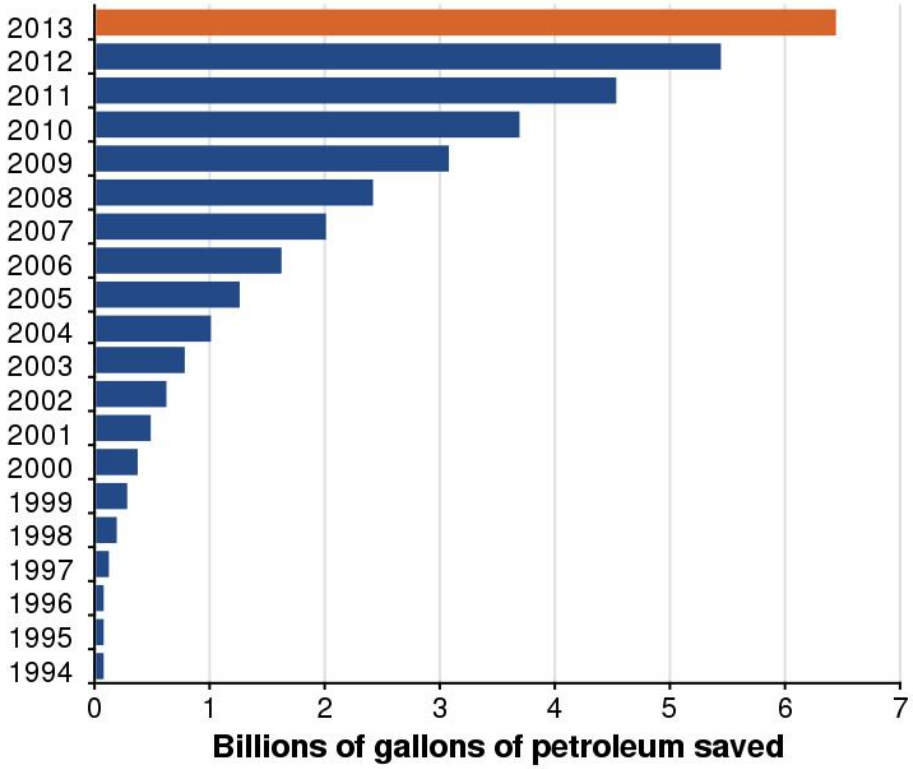
Hybrids

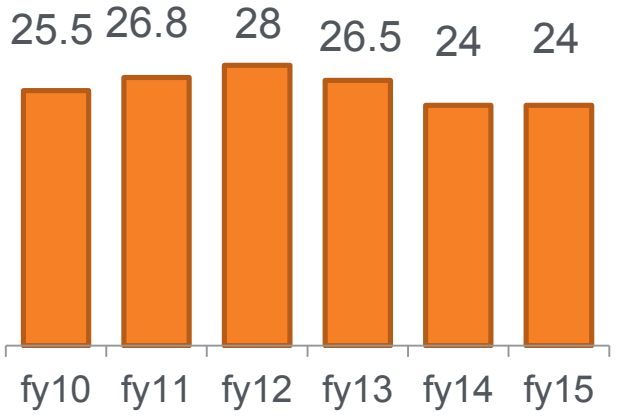
Light- and heavy-duty
Electric hybrids
Plug-In hybrids
Hydraulic hybrids

Progress to date and Long Term Goal

Nearly 6.5 Billion Gallons of Petroleum Reduction since 1993

- Over 592,000 AFVs reported on the road in CC territories
- Over 19,000 alternative fueling and charging stations (CC influenced >70%)
- Long term goal of 2.5B gal/year by 2020 (achieved over 1B in 2013)





Budget History ($M)

2020 Goal – How Important is it?

Clean Cities
U.S. Department of Energy

Goal: 2.5 billion GGEs per year by 2020

What is this Equal to?

- Same amount of gasoline that all six NE-PADD-1 states used in 2013 combined *(CT, ME, MA, NH, RI, and VT)*
- Half the amount of **oil we imported from Iraq** in 2013
- One third the amount of **oil we imported from Russia** in 2013
- Three times the amount of **oil we imported from Libya** in 2013
- Twice the amount of **oil we imported from India** in 2013

VT Deployment Strategy (leveraging people & resources)

Implement national policies and initiatives by facilitating change on a Local and National basis

Local

Develop a Franchise model (designate CC coalitions) so that approach and message are consistent everywhere, but with attention to local market conditions and priorities (provide strategic direction and comprehensive training to franchisees)

Clean Cities
U.S. Department of Energy

National

Provide a national unbiased source of info

Provide tools, experts to address barriers and solve problems

Develop Corporate Partnerships with Industry and National Fleets

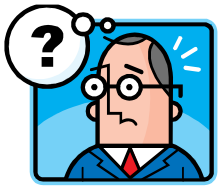
Increase awareness and publicize success through mass media and outreach

Provide financial assistance to jump start markets and incentivize private investment

Clean Cities Deployment Efforts include 4 major activities

Coalition Support/Partnership Development: *DOE helps convene key community and business leaders to develop and implement projects, leverage resources, and address local barriers*

Consumer Information, Outreach, and Education: *DOE-developed tools help consumers save money on fuel cost and help fleets understand their options for cost-effective alternatives to gasoline and diesel fuel*



Technical & Problem Solving Assistance: *DOE experts help leaders address permitting and safety issues, technology shortfalls, and other project implementation barriers*

Competitively-Awarded Financial Assistance: *Federal cost-share encourages initial private sector match and long-term investment*

Competitively-Awarded Financial Assistance:

Encourages private sector match and long-term investment

Clean Cities
U.S. Department of Energy

Recent Awards – ($6M) 11 Clean Cities Alternative Fuel Vehicle deployment projects. These projects include:

- Driver Experience/Demo projects - Improve potential buyers' experiences with alternative fuel and plug-in electric vehicles
- Safety and Technical Training projects for first responders, public safety officials, and critical service providers
- Integrate alternative fuels into emergency response and preparedness operations

To be reviewed at future AMRs

Technical and Problem Solving Assistance

- Capture lessons learned and develop best practices
- Technical Forums and User Groups
- Address unforeseen permitting and safety issues
- Identify chronic vehicle or infrastructure field problems
- Incident investigations (learn from failures)

Clean Cities
U.S. Department of Energy

Model EVSE Permit

Application for Installation of Electric Vehicle Charging Equipment

NOTICE: The system must be installed in compliance with the National Electric Code® NFPA 70, Article 625 Electric Vehicle Charging System or applicable electrical code currently adopted and enforced within the jurisdiction of installation. All associated work with circuits, electrical service and meters shall be completed in compliance with NFPA 70, national electric code, or applicable electrical code currently adopted and enforced within the jurisdiction of installation.

Section 1: Permit Applicant Information

Name:			
Installation Street Address (P.O. box not acceptable):	Contract Person:		Phone Number: ( ) -
City:	County:	State:	ZIP Code:
Owner Name:	Street Address:		Phone Number: ( ) -
City:	State:		ZIP Code:
Submitter's Name/Company	Street Address:		Phone Number: ( ) -
City:	State:		ZIP Code:
General description of equipment to be installed:			

Section 2: Permit Code Information

Requirements for wiring a charging station are taken directly out of the 2011 edition of the National Electrical Code® (NEC) NFPA 70, Article 625 Electric Vehicle Charging System. This article does not provide all of the information necessary for the installation of electric vehicle charging equipment. Please refer to the current edition of the electrical code adopted by the local jurisdiction for additional installation requirements. Reference to the 2011 NEC may be made at www.nfpa.org/70.

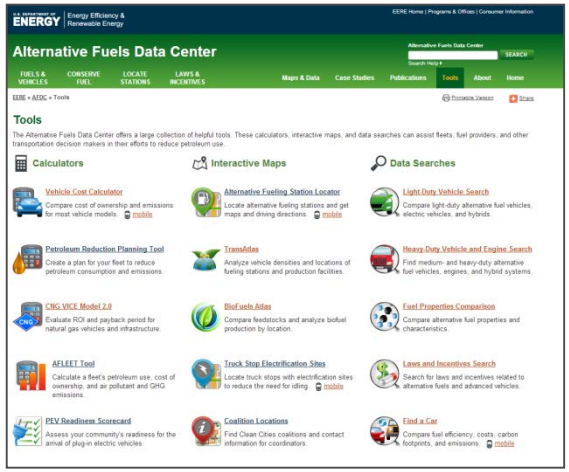
NEC® Chapter or Article	DESCRIPTION
Chapter 2 and 3	**Branch Circuit** A new electrical box added on a branch circuit shall comply with NFPA 70 National Electrical Code® Chapter 2 Wiring and Protection and Chapter 3 Wiring Methods and Materials and all administrative requirements of the NEC or the electrical code in effect in the jurisdiction
625.4	**VOLTAGES** Unless other Voltages are specified, the nominal ac system voltages of 120, 120/240, 208Y/120, 240, 480Y/277, 480, 600Y/347, and 600 Volts shall be used to supply equipment
625.5	**LISTED OR LABELED** All electrical materials, devices, fittings, and associated equipment shall be listed or labeled.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Consumer Information, Outreach, and Education

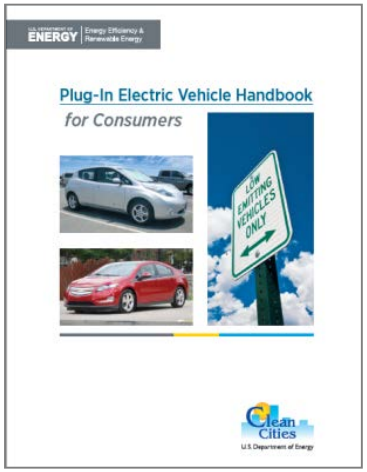
- Non-biased source of VT data and information
- Fuel Economy Guide (FE.gov), Alt-Fuel Data Center (AFDC)
- On-line tools and cost calculators, other web resources
- Alternative Fuels Station Locator
- Fact Sheets, publications, handbooks, success stories
- Technical Response Service and Hotline
- Public workshops, webinars, industry technical conferences

Tech Bulletins



Online Tools

Technical Response Service



Publications

Consumer Information -- Bedrock Resources examples

Fueleconomy.gov

Enables consumers to find the fuel-efficient vehicle that meets their needs, as well as save gas and money with their current vehicles

Alternative Fuels Data Center

Helps fleets choose the right alternative fuel or other petroleum reduction approach for them, with case studies and interactive tools

Coalition Support and Partnership Development

~100 coalitions serving 80% of the US population

Thousands of stakeholders from businesses, city/state governments, transportation industry, community based organizations, utilities and fuel providers

DOE National Lab Deployment Program Support Activities

These projects will be reviewed today:

Oak Ridge National Laboratory (ORNL)

- Fuel Economy Guide and FuelEconomy.gov website
- FE Information Project; Research, Data Validation, and Technical Assistance

National Renewable Energy Laboratory (NREL)

- Alternative Fuel Station Locator
- Alternative Fuels Data Center and API Program Interface
- CC Coordinator Resource Building and National Networking Activities
- CC "Tiger Team" Technical and Problem Solving Assistance

Argonne National Laboratory (ANL)

- Clean Cities Collegiate Career Development Programs
- Alternative Fuel Analytical Tools and Technical Assistance

Contact Information

www.vehicles.energy.gov

Clean Cities
U. S. Department of Energy

Vehicle Education

Legislative & Rulemaking

Dennis Smith,
202-586-1791
Dennis.a.smith@ee.doe.gov

Connie Bezanson,
202-586-2339
Connie.bezanson@ee.doe.gov

Dana O'Hara,
202-586-8063
Dana.o'hara@ee.doe.gov